

ABSTRACT

An apparatus and method for cleaving an optical fiber waveguide comprises a support base, a fixed fiber support including a fixed fiber base and a self-aligning fiber holder, a fiber pull tension assembly including a tension assembly base and a rotatable pull clamp, a tension spring, and a scribing knife assembly. The self-aligning fiber holder and the pull clamp support the fiber in an adjustable tension applied by the tension spring. The knife assembly comprises a blade carriage reciprocally driven on a linear slide by a motor drive assembly through a crank and a crank actuator. On the blade carriage is mounted a scribing blade borne on a blade arm that is upwardly biased. A guide pin on the blade arm engages a generally parallelogram-shaped guide track in the fixed fiber base. The guide track has an upper track and a lower track. During forward motion of the blade carriage, the guide pin travels in the lower track, thereby depressing the blade arm. Throughout the rearward motion of the carriage, the blade arm remains in an upper position, wherein the scribing blade engages the fiber with a scribing force and scribes it. Preferably the scribing force is adjustable. The carriage further comprises a fiber tension profile bar which engages a roller on the pull clamp to limit the tension in the fiber that results from rotation of the pull clamp caused by the tension spring. Preferably the bar has a plurality of profile steps, whereby the tension is applied to the fiber at a plurality of levels during the rearward travel of the blade carriage. The levels preferably comprise a scribing level applied during the scribing and a fracture level applied subsequently. During scribing, the scribing level is sufficient to hold the fiber taut without substantially curling or rotating it. The fracture level is sufficiently higher than the scribing level to cause fracture of the fiber after scribing.